INDIANA DEPARTMENT OF TRANSPORTATION
OFFICE OF MATERIALS MANAGEMENT

VERIFYING BALANCES
ITM No. 910-08T

1.0 SCOPE.

1.1 This test method covers the procedures for verifying the accuracy and off-center error of balances.

1.2 The values stated in either acceptable English or SI metric units are to be regarded separately as standard, as appropriate for a specification with which this ITM is used. Within the text, SI metric units are shown in parenthesis. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other, without combining values in any way.

1.3 This ITM may involve hazardous materials, operations, and equipment and may not address all of the safety problems associated with the use of the test method. The user of the ITM is responsible for establishing appropriate safety and health practices and determining the applicability of regulatory limitations prior to use.

2.0 REFERENCES.

2.1 AASHTO Standards.

M 231 Weighing Devices Used in the Testing of Materials

3.0 TERMINOLOGY. Definitions for terms and abbreviations will be in accordance with the Department's Standard Specifications, Section 101 and the following:

3.1 Accuracy. The degree of agreement of the measurement with the true value of the quantity measured.

3.2 Off-Center Errors. The differences in indicated weight (mass) when a sample weight (mass) is shifted to various positions on the weighing area of the sample pan.

4.0 APPARATUS.

4.1 Balance, a Class G2, G5, or G20, in accordance with AASHTO M 231.

4.2 A set of weights up to the capacity of the balance with sufficient subdivisions of weight so that increments of about 10 percent of the capacity up to the capacity may be tested. The weights shall be a minimum ASTM Class 3 set of weights with a calibration report indicating traceability to the National Institute of Standards and Technology (NIST). The weights shall be calibrated at a minimum frequency of once each 12 months.

4.3 Thermometer, room temperature, with a resolution of at least 2°F (1 °C).

5.0 SIGNIFICANCE AND USE.

This ITM is used by laboratory personnel to verify the accuracy and off-center error of balances.

6.0 PROCEDURE.

6.1 General. Use the balance in the manner recommended by the manufacturer for each step of the verification procedures.

6.2 Accuracy.

6.2.1 Clean the balance and standard weights with a lint free dry cloth.

6.2.2 Place the standard weights near the instrument.

6.2.3 Allow the balance and the weights to stabilize to the ambient working temperature.

6.2.4 Place the thermometer on the bench near the balance and record the temperature.

6.2.5 Place the standard weight(s) in the center of the balance pan in increasing increments of about 10 percent of the capacity and record the indications. If possible, the weights should be stacked upon each other.

6.3 Off-Center Error.

6.3.1 Place the standard weight(s) equal to half-capacity of the balance on the center of the sample pan and record the indication.

6.3.2 Place the same standard weight(s) on each corner of the sample pan and record the indication.

7.0 TOLERANCES.

7.1 G2 Balance.

7.1.1 Within any interval equal to about 10 percent of the capacity of the balance, the accuracy shall be equal to 0.2 g or 0.1 percent of the test load, whichever is greater.

7.1.2 The maximum off-center error shall be equal to or less than 0.2 g.

7.2 G5 Balance.

7.2.1 Within any interval equal to about 10 percent of the capacity of the balance, the accuracy shall be equal to 2 g or 0.1 percent of the test load, whichever is greater.

7.2.2 The maximum off-center error shall be equal to or less than 2 g.

7.3 G20 Balance.

7.3.1 Within any interval equal to about 10 percent of the capacity of the balance, the accuracy shall be equal to 5 g or 0.1 percent of the test load, whichever is greater.

7.3.2 The maximum off-center error shall be equal to or less than 5 g.

8.0 REPORT. The accuracy and off-center error are reported on the form in Appendix A.

BALANCE VERIFICATION
ITM 910

Model Number: _____ Serial Number: _____

Standard Weights NIST Number: _____ Class: _____Temperature: _____

ACCURACY			
Weight (Mass) Applied	**Indication on Balance**	**Weight (Mass) Different**	**Percent of Error**

OFF-CENTER ERROR			
Weight (Mass) Applied	**Location**	**Indication on Balance**	**Weight (Mass) Difference**
	Center		
	Corner		
	Corner		
	Corner		
	Corner		

Remarks: _____

Verified by: _____

Date: _____ Next Due Date: _____